WHAT IS CLAIMED IS:

1. (Amended) A position detecting system, comprising:

light source means for providing coherent light;

incoherence-transforming means for transforming the coherent light, from said light source means, into incoherent light;

an optical system for dividing the incoherent light from said incoherence-transforming means into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate a target upon a surface of an object while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate image, and wherein light from the target and light reflected by the conjugate surface are re-combined;

image pickup means for producing an imagewise signal corresponding to the target on the basis of the light re-combined by said optical system, wherein position information related to a position of the target with respect to a direction along the surface of the object can be produced on the basis of the imagewise signal; and

image contrast adjusting means for adjusting an image contrast of an image of a portion close to the target, as picked up by said image pickup means.

2. A position detecting system according to Claim 1, wherein said incoherence-transforming means includes light diffusing means movably disposed along a light path in said position detecting system.

3. A position detecting system according to Claim 1, wherein said optical system includes a polarization beam splitter for dividing the incoherent light, and wherein two light beams divided by said polarization beam splitter are directed to the target and the conjugate surface, respectively.

4. (Amended) A position detecting system according to Claim 1, wherein the target comprises a mark provided on the object, the mark has a surface having a surface level difference with respect to a direction of an optical axis of said optical system, said image contrast adjusting means is operable to move the object along the optical axis direction of said optical system, and said image pickup means is operable to detect an imagewise signal related to the mark, at a position, as the object is moved along the optical axis direction, corresponding to a peak value at which a difference in reflection factor between a top and a bottom of the surface level difference of the mark is large.

5. (Amended) A position detecting system according to Claim 4, wherein said image pickup means produces two imagewise signals related to the mark, at two positions corresponding to a peak where the difference in reflection factor at the top and bottom of the surface level difference of the mark is large and where a sign of the difference in reflection factor is inverted, and wherein the positional information related to the mark can be produced on the basis of a difference between the two imagewise signals.

6. (Amended) A position detecting system according to Claim 1, wherein said light source means includes a plurality of light sources providing different wavelengths, the target comprises a mark provided on the object, the mark has a surface having a surface level difference with respect to a direction of an optical axis of said optical system, said image contrast adjusting means is operable to move the object along the optical axis direction of said optical system, and one of said plural light sources, which provides light with which a difference in reflection factor between a top and a bottom of the surface level difference of the mark becomes largest as the object is moved in the optical axis direction, is selectively used.

7. (Amended) An exposure apparatus, comprising:

position detecting means for detecting a position of an alignment mark on a surface of a workpiece to be exposed, said position detecting means including (i) light source means for providing coherent light, (ii) incoherence-transforming means for transforming the coherent light from said light source means, into incoherent light, (iii) an optical system for dividing the incoherent light from said incoherence-transforming means into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate the alignment mark on the surface of the workpiece while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate image, and wherein light from the alignment mark and light reflected by the conjugate surface are re-combined, (iv) image pickup means for producing an imagewise signal corresponding to the alignment mark on the

basis of the light re-combined by said optical system, and (v) image contrast adjusting means for adjusting an image contrast of an image of a portion close to the alignment mark, as picked up by said image pickup means; and

exposure means for aligning the workpiece by use of positional information related to a position of the alignment mark with respect to a direction along the surface of the workpiece and produced on the basis of the imagewise signal, and for performing a pattern exposure to the workpiece.

8. (Amended) A device manufacturing method, comprising:

a position detecting step for detecting a position of an alignment mark on a surface of a workpiece to be exposed, by use of a position detecting system which includes (i) light source means for providing coherent light, (ii) incoherence-transforming means for transforming the coherent light from the light source means, into incoherent light, (iii) an optical system for dividing the incoherent light from the incoherence-transforming means into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate the alignment mark on the surface of the workpiece while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate image, and wherein light from the alignment mark and light reflected by the conjugate surface are re-combined, (iv) image pickup means for producing an imagewise signal corresponding to the alignment mark on the basis of the light re-combined by the optical system, and (v) image contrast adjusting means

for adjusting an image contrast of an image of a portion close to the alignment mark, as picked up by the image pickup means;

a pattern exposure step for aligning the workpiece by use of positional information related to a position of the alignment mark with respect to a direction along the surface of the workpiece and produced on the basis of the imagewise signal, and for performing a pattern exposure to the workpiece; and

a development step for developing the workpiece having been exposed through said pattern exposure step, whereby a device can be produced from the developed workpiece.

9. (Amended) A device manufacturing method, comprising:

a pattern exposure step for aligning a workpiece to be exposed and then performing a pattern exposure to the workpiece, by use of an exposure apparatus which includes (i) light source means for providing coherent light, (ii) incoherence-transforming means for transforming the coherent light from the light source means, into incoherent light, (iii) an optical system for dividing the incoherent light from the incoherence-transforming means into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate an alignment mark on a surface of the workpiece while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate image, and wherein light from the alignment mark and light reflected by the conjugate surface are re-combined, (iv) image pickup means for producing an imagewise signal corresponding to the

alignment mark on the basis of the light re-combined by the optical system, (v) image contrast adjusting means for adjusting an image contrast of an image of a portion close to the alignment mark, as picked up by the image pickup means, and (vi) exposure means for aligning the workpiece by use of positional information related to a position of the alignment mark with respect to a direction along the surface of the workpiece and produced on the basis of the imagewise signal, and for performing a pattern exposure to the workpiece; and

a development step for developing the workpiece having been exposed through said pattern exposure step, whereby a device can be produced from the developed workpiece.

10. (Amended) An inspecting system, comprising:

position detecting means for performing position detection in relation to two marks provided on an object to be inspected, said position detecting means including (i) light source means for providing coherent light, (ii) incoherence-transforming means for transforming the coherent light from the light source means, into incoherent light, (iii) an optical system for dividing the incoherent light from the incoherence-transforming means into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate the marks on a surface of the object while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate image, and wherein light from the marks and light reflected by the conjugate surface are re-combined, (iv) image pickup means for producing an imagewise signal corresponding to the marks on the basis of the light re-combined by the

optical system, and (v) image contrast adjusting means for adjusting an image contrast of an image of a portion close to the marks, as picked up by the image pickup means; and

inspecting means for inspecting a precision of mark registration on the basis of positional information related to the marks and with respect to a direction along the surface of the object and produced from the imagewise signal from said image pickup means.

11. (Amended) A position detecting system, comprising:

at least one coherent light source;

a diffusion plate disposed on at least one light path for the coherent light from said at least one coherent light source, said diffusion plate being movable during passage of the coherent light therethrough;

an optical system for dividing the light passed through said diffusion plate into divided light beams, wherein one of the divided light beams produces an intermediate image, and light from the intermediate image is directed to illuminate a target on a surface of an object, while another of the divided light beams is directed to be reflected by a surface which is optically conjugate with the intermediate surface, and wherein light from the target and light reflected by the conjugate surface are re-combined; and

an image pickup device disposed at a position where the light re-combined by said optical system is incident, for producing an imagewise signal corresponding to the target,

wherein positional information related to a position of the target with respect to a direction along the surface of the object can be produced on the basis of the imagewise signal, and

wherein said optical system has a function for adjusting an optical path difference between the object side light and the reference surface side light to thereby adjust an image contrast of an image of a portion close to the target, as picked up by said image pickup means.

-- 12. (New) A method of detecting a mark formed on an object, the method comprising the steps of:

dividing light from a light source into divided light beams, wherein one of the divided light beams is taken as light for illuminating the mark while the other is taken as a reference light;

causing interference between light from the mark and the reference light, while setting a difference in an optical path length between the light from the mark and the reference light, at a first predetermined value, thereby to obtain a first image of the mark;

causing interference between the light from the mark and the reference light, while setting a difference in an optical path length between the light from the mark and the reference light, at a second predetermined value, thereby to obtain a second image of the mark; and

producing a third image of the mark on the basis of a difference between the first image and the second image. --